UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/550,369 | 07/12/2006 | Takashi Sasabayashi | 3408.73910 | 7981 |

24978 7590 08/08/2008

GREER, BURNS & CRAIN
300 S WACKER DR
25TH FLOOR
CHICAGO, IL 60606

| EXAMINER | |
|---|---|
| LUONG, DZU D | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2871 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 08/08/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/550,369 | SASABAYASHI, TAKASHI | |
| | Examiner | Art Unit | |
| | DZU LUONG | 2871 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *15 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *7 and 10-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. Receipt is acknowledged of Applicant's Amendment filed May15, 2008.

   - Claims 7 and 10 have been canceled.
   - Claims 1-6 and 8-9 are pending.

   An action on the merits is as follows.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

   > (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims **1-2, 5, 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947. Hereinafter "Kamimura"), in view of Kubo et al. (US 2001/0055082 A1).

   ***Regarding Claim 1:***

   Kamimura discloses a liquid crystal display device (`liquid crystal panel 11`. See at least Figs. 1-2) comprising

   - a liquid crystal layer (`14`) and
   - a pair of electrodes (`counter electrode 26` and `pixel electrode 21`) for

applying voltage onto the liquid crystal installed on both sides of said liquid crystal layer,

the liquid crystal layer and pair of electrodes being sandwiched by a pair of substrates (substrates 25b and 25c. See at least Fig. 2b) wherein:

- said liquid crystal layer has a section obtained by polymerizing a polymerizable compound in the presence of said liquid crystal (a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape) through selective irradiation of active energy rays (UV) over the substrate surface (25b. See example 3, paragraphs 39 and 40).
- a section or sections (alignment direction controlling section or sections) that show an effect to control the alignment directions caused by a polymerized liquid crystal composition obtained by the selective irradiation of active energy rays are installed on either one of the surfaces which contact the liquid crystal layer (liquid crystal layer contacting surfaces), or each independently on both of the surfaces; (When the completed liquid crystal panel was observed, a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape and good viewing angle properties were realized. See paragraphs 40 and 41).

Kamimura fails to disclose an arrangement of polarizers and compensators.

Kubo et al. discloses a liquid crystal display device (See at least Figs. 15A-B) wherein:

- a first polarizer (6) and
- a second polarizer (9) are installed each on one of the outer sides of said pair of said pair of substrates so that the absorption axes of the two polarizers are perpendicular to each other;
- a first 1/4 wavelength plate (7) is installed between one of said substrates and the first polarizer;
- a second 1/4 wavelength plate (10) is installed between the other one of said substrates and the second polarizer; and (See Figs. 15A-B),
  - the absorption axis (perpendicular to transmission axis) of the first polarizer is at 45° from the phase delay axis of the first 1/4 wavelength plate,
  - the absorption axis (perpendicular to transmission axis) of the second polarizer is at 45° from the phase delay axis of the second 1/4 wavelength plate, and
  - the phase delay axis of the first 1/4 wavelength plate and the phase delay axis of the second 1/4 wavelength plate are perpendicular to each other.

Therefore it would have been at least obvious to one of ordinary skill in the art to employ the arrangement of polarizers/compensators as taught by Kubo et al. for achieving a sufficiently high contrast (See paragraph 40, lines 4-5 of Kubo et al.).

***Regarding Claim 2:***

Kamimura discloses a liquid crystal display device (liquid crystal panel 11. See at least Figs. 1-2) comprising

- a liquid crystal layer (14) and
- a pair of electrodes (counter electrode 26 and pixel electrode 21) for applying voltage onto the liquid crystal installed on both sides of said liquid crystal layer,

the liquid crystal layer and pair of electrodes being sandwiched by a pair of substrates (substrates 25b and 25c. See at least Fig. 2b) wherein:

- said liquid crystal layer has a section obtained by polymerizing a polymerizable compound in the presence of said liquid crystal (a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape) through selective irradiation of active energy rays (UV) over the substrate surface (25b. See example 3, paragraphs 39 and 40) without voltage application.
- a section or sections (alignment direction controlling section or sections) that show an effect to control the alignment directions caused by a polymerized liquid crystal composition obtained by the selective irradiation of active energy rays are installed on either one of the surfaces which contact the liquid crystal layer (liquid crystal layer contacting surfaces), or each independently on both of the surfaces; (When the completed liquid crystal panel was observed, a degree of partitioning was formed for the liquid crystal

unit cells along the lattice shape and good viewing angle properties were realized. See paragraphs 40 and 41).

Kamimura fails to disclose an arrangement of polarizers and compensators.

Kubo et al. discloses a liquid crystal display device (See at least Figs. 15A-B) wherein:

- a first polarizer (6) and
- a second polarizer (9) are installed each on one of the outer sides of said pair of said pair of substrates so that the absorption axes of the two polarizers are perpendicular to each other;
- a first 1/4 wavelength plate (7) is installed between one of said substrates and the first polarizer;
- a second 1/4 wavelength plate (10) is installed between the other one of said substrates and the second polarizer; and (See Figs. 15A-B),
  - the absorption axis (perpendicular to transmission axis) of the first polarizer is at 45° from the phase delay axis of the first 1/4 wavelength plate,
  - the absorption axis (perpendicular to transmission axis) of the second polarizer is at 45° from the phase delay axis of the second 1/4 wavelength plate, and
  - the phase delay axis of the first 1/4 wavelength plate and the phase delay axis of the second 1/4 wavelength plate are perpendicular to each other.

Therefore it would have been at least obvious to one of ordinary skill in the art to employ the arrangement of polarizers/compensators as taught by Kubo et al. for achieving a sufficiently high contrast (See paragraph 40, lines 4-5 of Kubo et al.).

***Regarding Claim 5:***

Kamimura discloses a liquid crystal display device according to one of claim 1 or 2, where said liquid crystal layer shows a specific light shielding pattern (a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape. See paragraph 40) caused by the alignment of liquid crystal molecules when a voltage is applied after said irradiation or irradiations of active energy rays.

***Regarding Claim 8:***

Kamimura discloses a liquid crystal display device according to claim 7 (claim 1), wherein at least one means selected from the group consisting of protrusions (partitioning), depressions and a slit pattern (Slit 34. See at least Fig. 3) in an electrode is installed on the surface or surfaces which contact the liquid crystal layer (liquid crystal layer contacting surface or surfaces) (a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape. See paragraph 40).

4. Claim **3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947. Hereinafter "Kamimura"), in view of Inoue et al. (US

2003/0095229 A1).

***Regarding Claim 3*:**

Kamimura discloses a liquid crystal display device according to claim 1 or 2, but fails to discloses the second irradiation of active energy rays all over the substrate surface with voltage application.

Inoue et al. discloses a method of fabricating a liquid crystal display device, wherein after polymerizing the monomer, additional radiation is applied to the liquid crystal composition without applying the liquid crystal driving voltage or while applying a voltage of a magnitude that does not substantially drive the liquid crystal. Therefore, it would have been at least obvious to one of ordinary skill in the art to employ the method disclosed by Inoue et al. to obtain similar advantages such as controlling the alignment of liquid crystal molecules when radiating light onto a liquid crystal composition containing a photosensitive material (See paragraph 111, lines 8-12; and paragraph 27, lines 4-7; and embodiment 2 in Fig. 33; respectively). In other words, Kimura as modified by Inoue et al. discloses

- a liquid crystal display device according to claim 1 or 2, wherein said liquid crystal layer has a section obtained by polymerization through selective irradiation of active energy rays followed by irradiation of active energy rays all over the substrate surface with voltage application.

Doing so would achieve substantially uniform alignment of liquid crystal molecules and ensure stable operations (See paragraph 27, lines 7-9).

5. Claim **9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947. Hereinafter "Kamimura"), in view of Takeda et al. (US 6,661,488 B1).

***Regarding Claim 9:***

Kamimura discloses a liquid crystal display device according to one of claim 1 or 2, but fails to disclose the liquid crystal has a negative dielectric constant anisotropy.

Takeda et al. discloses a liquid crystal display device wherein said liquid crystal has a negative dielectric constant anisotropy (130. See at least Fig. 110, and abstract), and is aligned in the direction vertical to the substrate surface when no voltage is applied after said irradiation or irradiations of active energy rays. Therefore, it would have been at least obvious to one of ordinary skill in the art to employ a liquid crystal having negative dielectric constant anisotropy as disclosed by Takeda et al. to obtain higher contrast, and in addition, a response speed is also higher, and an excellent viewing angle characteristic is provided for white display and black display (See column 2, lines 4-9 of Takeda et al.)

6. Claim **4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947) in view of Inoue et al. (US 2003/0095229 A1), and further in view Park et al. (US 2003/0147032 A1).

***Regarding Claim 4*:**

Kamimura discloses a liquid crystal display device according to claim 3, but fails to disclose wherein at least one of said two irradiations of active energy rays has been carried out along a direction tilted from the normal to the substrate surface.

Park et al. discloses an UV irradiation device, wherein the UV light source being irradiated at a tilt angle upon the substrate. Therefore, it would have been at least obvious to one of ordinary skill in the art to employ tilted rays to obtain advantages such as the sealant (Applicant's polymerizable compound) can be hardened even if a light-shielding layer is formed right under a UV irradiating surface (See abstract of Park et al.).

7. Claim **6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947), in view of Lin et al. (2003/0156237 A1), and Takeda et al. (US 6,661,488 B1).

***Regarding Claim 6*:**

Kamimura discloses a liquid crystal display device according to claim 5, wherein said specific light shielding pattern caused by the alignment of liquid crystal molecules comprises at least one pattern selected from the group consisting of a lattice pattern (Fig. 5), but fails to disclose a crisscross pattern, a pattern in the shape of stripes, a pattern in the shape of stripes with bends.

Lin et al. discloses protruding structure 134 (See Fig. 5b) has a

crisscross appearance,

Takeda et al. discloses an arrangement of linear (striped) protrusions 20A-B and stripes with bends 20A-B as shown in Figs. 69A and 71, respectively.

Therefore, it would have been at least obvious to one of ordinary skill in the art to employ light shielding patterns disclosed by Lin et al. and Takeda et al. for improving the viewing angle performance in the VA LCD (See column 3, lines 29-30 of Takeda et al.)

***Double Patenting***

8. Claim **2** objected to under 37 CFR 1.75 as being a substantial duplicate of claim **1**. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Response to Arguments***

9. Applicant's arguments filed May 15, 2008 have been fully considered but they are not persuasive.

   - Applicant's arguments with respect to concentration of the monomers is less than 1 wt% whereas the concentration of the monomers is 50% in Example 2 of Kamimura.

- Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

It is for this reason that the rejections have been maintained.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### *Contact Information*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzu Luong whose telephone number is 571-270-3102. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID NELMS can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DL/
Dzu Luong
August 6, 2008

/David Nelms/

Supervisory Patent Examiner, Art Unit 2871